

Application No. 09/921,989
Docket No. YOR920000444
Amendment dated September 8, 2004
Reply to Office Action of June 8, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (currently amended): A method of regulating admittance of a number of TCP connection requests to a plurality of servers that support to a plurality of applications and a plurality of customers, each of the customers having electronic business activity hosted by the plurality of servers on the basis of a service level agreement that specifies a minimum TCP connection rate that the customer is guaranteed, the method comprising the steps of:

receiving incoming workload for the plurality of customers for the plurality of applications into a common buffer, the incoming workload comprising IP packets associated with existing TCP connections and TCP connection requests; ~~and then~~

taking an IP packet from the common buffer;

detecting whether the IP packet taken from the common buffer is a TCP connection request packet or is associated with an existing TCP connection;

immediately sending the IP packet to the servers if the IP packet is associated with an existing TCP connection;

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rejecting the IP packet if associated with a TCP connection request unless the IP packet is necessary to meet the minimum TCP connection rate for the customer associated with the TCP connection request or if sending the IP packet to the servers does not prevent meeting the minimum TCP connection rate for another of the customers.

~~controlling flow of the incoming workload from the common buffer to the plurality of servers for each application and each customer so as to provide at least the minimum TCP connection rate for each customer and each application by regulating flow of the TCP connection request packets to the plurality of servers.~~

Claim 2 (original): The method according to claim 1, wherein all of the incoming workload is received into the common buffer and the TCP connection request packets are processed on a first in, first out basis.

Claim 3 (original): The method according to claim 1, wherein the method does not directly control outbound traffic from the plurality of servers.

Claim 4 (canceled): The method according to claim 1, wherein the controlling step is performed by detecting whether an IP packet is a TCP connection request packet, and immediately admitting all other packets.

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Claim 5 (currently amended): The method according to claim 1, ~~claim 4~~, wherein the detecting step is performed by determining whether a SYN bit of the IP packet is ON or OFF.

Claim 6 (canceled): The method according to claim 4, wherein IP packets associated with TCP connection requests are admitted if necessary to meet the minimum TCP connection rate for the customer associated with the TCP connection request.

Claim 7 (canceled): The method according to claim 6, wherein IP packets associated with a TCP connection request of one of the customers are also admitted if doing so does not prevent meeting the minimum TCP connection rate for another of the plurality of customers.

Claim 8 (currently amended): The method according to claim 1, wherein the rejected IP packet is dropped. ~~claim 7, further comprising the step of dropping TCP connection request packets that are not admitted during the controlling step.~~

Claim 9 (currently amended): The method according to claim 1, wherein the rejected IP packet is ~~claim 7, further comprising the step of returning TCP connection request packets that are not admitted during the controlling step, the TCP connection~~

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~~request packets not admitted during the controlling step being~~ returned with a reset code bit ON.

Claim 10 (original): The method according to claim 1, further comprising the step of calculating whether TCP connection request packets of one or more of the customers can be admitted for one or more of the applications when the one or more customers already exceed the minimum TCP connection rate for the one or more applications.

Claim 11 (original): The method according to claim 1, further comprising the step of communicating with an external means to receive revisions to one or more of the service level agreements.

Claim 12 (original): The method according to claim 1, further comprising the step of communicating with an external means to send collected statistics data to the external means.

Claim 13 (currently amended): The method according to claim 1, wherein the detecting, sending and rejecting steps are ~~controlling step is~~ performed with a real-time admittance/rejection algorithm wherein the flow of the TCP connection request

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packets is regulated to the plurality of servers on a per-packet basis.

Claim 14 (currently amended): The method according to claim 1, wherein the detecting, sending and rejecting steps are ~~controlling step is~~ performed with a target-rate-based admittance/rejection algorithm wherein the flow of the TCP connection request packets is regulated to the plurality of servers on a per-unit-time basis.

Claim 15 (original): A method of controlling and guaranteeing a service level agreement based on a number of TCP connection requests supported to a plurality of applications and a plurality of customers having electronic business activity hosted by a server farm, each of the customers having a service level agreement that specifies a minimum TCP connection rate that the customer is guaranteed, the method comprising the steps of:

receiving all incoming workload for the plurality of customers for the plurality of applications into a common buffer, the incoming workload comprising IP packets associated with existing TCP connections and TCP connection requests;

taking TCP connection request packets from the common buffer on a first in, first out basis; and

controlling flow of the IP packets from the common buffer to the server farm

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for each application and each customer so as to provide at least the minimum TCP connection rate for each customer and each application by regulating flow of the TCP connection request packets to the server farm, the controlling step comprising:

detecting whether an IP packet is a TCP connection request packet or associated with an existing TCP connection;

immediately admitting IP packets associated with existing TCP connections;

admitting TCP connection request packets if necessary to meet the minimum TCP connection rate for the customer associated with the TCP connection request; and

admitting a TCP connection request packet of one of the customers if doing so does not prevent meeting the minimum TCP connection rate for another of the plurality of customers.

Claim 16 (original): The method according to claim 15, wherein the method does not directly control outbound traffic from the serve farm.

Claim 17 (original): The method according to claim 15, wherein the detecting step is performed by determining whether a SYN bit of the IP packet is ON or OFF.

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Claim 18 (original): The method according to claim 15, further comprising the step of dropping IP packets that are not admitted during the controlling step.

Claim 19 (original): The method according to claim 15, further comprising the step of returning TCP connection request packets that are not admitted during the controlling step, the IP packets not admitted during the controlling step being returned with a reset code bit ON.

Claim 20 (original): The method according to claim 15, further comprising the step of calculating whether a TCP connection request packet of one or more of the customers can be admitted for one or more of the applications when the one or more customers already exceed the minimum TCP connection rate for the one or more applications.

Claim 21 (original): The method according to claim 15, further comprising the step of communicating with an external means to receive revisions to one or more of the service level agreements, and to send collected statistics data to the external means.

Claim 22 (original): The method according to claim 15, wherein the controlling step is performed with a real-time admittance/rejection algorithm wherein

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the flow of the TCP connection request packets is regulated to the server farm on a per-packet basis.

Claim 23 (original): The method according to claim 15, wherein the controlling step is performed with a target-rate-based admittance/rejection algorithm wherein the flow of the TCP connection request packets is regulated to the server farm on a per-unit-time basis.

Claim 24 (currently amended): A system for regulating admittance of a number of TCP connection requests to a plurality of servers that support to a plurality of applications and a plurality of customers, each of the customers having electronic business activity hosted by the plurality of servers on the basis of a service level agreement that specifies a minimum TCP connection rate that the customer is guaranteed, the system comprising:

a common buffer for receiving incoming workload for the plurality of customers for the plurality of applications, the incoming workload comprising IP packets associated with existing TCP connections and TCP connection requests; and

regulator means for taking an IP packet from the common buffer, detecting whether the IP packet is a TCP connection request packet or is associated with an existing TCP connection, immediately sending the IP packet to the servers if the IP

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packet is associated with an existing TCP connection, and rejecting the IP packet if
associated with a TCP connection request unless the IP packet is necessary to meet the
minimum TCP connection rate for the customer associated with the TCP connection
request or if sending the IP packet to the servers does not prevent meeting the minimum
TCP connection rate for another of the customers. ~~controlling flow of the incoming~~
~~workload from the common buffer to the plurality of servers for each application and~~
~~each customer so as to provide at least the minimum TCP connection rate for each~~
~~customer and each application by regulating flow of the TCP connection request packets~~
~~to the plurality of servers.~~

Claim 25 (original): The system according to claim 24, wherein the common buffer is configured to receive all of the incoming workload, and the controlling means is configured to process the TCP connection request packets on a first in, first out basis.

Claim 26 (original): The system according to claim 24, wherein the system is not configured to directly control outbound traffic from the plurality of servers.

Claim 27 (canceled): The system according to claim 24, wherein the controlling means is configured to detect whether an IP packet is associated with an existing TCP connection or a TCP connection request, and to immediately admit IP

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packets associated with existing TCP connections.

Claim 28 (currently amended): The system according to claim 24, ~~claim 27~~, wherein the regulator ~~controlling~~ means is configured to determine whether a SYN bit of an IP packet is ON or OFF.

Claim 29 (canceled): The system according to claim 4, wherein the controlling means is configured to admit TCP connection request packets if necessary to meet the minimum TCP connection rate for the customer associated with the TCP connection request.

Claim 30 (canceled): The system according to claim 29, wherein the controlling means is configured to admit a TCP connection request packet of one of the customers if doing so does not prevent meeting the minimum TCP connection rate for another of the plurality of customers.

Claim 31 (currently amended): The system according to claim 24, wherein the regulator means further comprises ~~claim 30, further comprising~~ means for dropping rejected IP packets. ~~TCP connection request packets that are not admitted by the controlling means.~~

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Claim 32 (currently amended): The system according to claim 24, wherein
the regulator means further comprises ~~claim 30, further comprising~~ means for
 returning rejected IP packets ~~TCP connection request packets that are not admitted~~
 with a reset code bit ON.

Claim 33 (original): The system according to claim 24, further comprising
 means for calculating whether TCP connection request packets of one or more of the
 customers can be admitted for one or more of the applications when the one or more
 customers already exceed the minimum TCP connection rate for the one or more
 applications.

Claim 34 (original): The system according to claim 24, further comprising
 means for communicating with an external means to receive revisions to one or more of
 the service level agreements.

Claim 35 (original): The system according to claim 24, further comprising
 means for communicating with an external means to send collected statistics data to the
 external means.

Claim 36 (currently amended): The system according to claim 24, wherein

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the regulator ~~controlling~~ means operates with a real-time admittance/rejection algorithm wherein the flow of the TCP connection request packets is regulated to the plurality of servers on a per-packet basis.

Claim 37 (currently amended): The system according to claim 24, wherein the regulator ~~controlling~~ means operates with a target-rate-based admittance/rejection algorithm wherein the flow of the TCP connection request packets is regulated to the plurality of servers on a per-unit-time basis.

Claim 38 (original): A system of controlling and guaranteeing a service level agreement based on a number of TCP connection requests supported to a plurality of applications and a plurality of customers having electronic business activity hosted by a server farm, each of the customers having a service level agreement that specifies a minimum TCP connection rate that the customer is guaranteed, the system comprising:

a common buffer into which is received all incoming workload for the plurality of customers for the plurality of applications, the incoming workload comprising IP packets associated with existing TCP connections and TCP connection requests;

a gatekeeper that takes the IP packets from the common buffer on a first in, first out basis and controls flow of the IP packets from the common buffer to the server

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farm for each application and each customer so as to provide at least the minimum TCP connection rate for each customer and each application by regulating flow of the IP packets to the server farm, the gatekeeper being operable to detect whether an IP packet is a TCP connection request packet or associated with an existing TCP connection, immediately admit IP packets associated with existing TCP connections, admit a TCP connection request packet if necessary to meet the minimum TCP connection rate for the customer associated with the TCP connection request, and admit a TCP connection request packet of one of the customers if doing so does not prevent meeting the minimum TCP connection rate for another of the plurality of customers.

Claim 39 (original): The system according to claim 38, wherein the system does not directly control outbound traffic from the serve farm.

Claim 40 (original): The system according to claim 38, wherein the gatekeeper is configured to determine whether a SYN bit of the IP packet is ON or OFF.

Claim 41 (original): The system according to claim 38, further comprising a guide means for dropping TCP connection request packets that are not admitted by the gatekeeper

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Claim 42 (original): The system according to claim 38, further comprising a guide means for returning TCP connection request packets that are not admitted with a reset code bit ON.

Claim 43 (original): The system according to claim 38, further comprising an assistant means for calculating whether TCP connection request packets of one or more of the customers can be admitted for one or more of the applications when the one or more customers already exceed the minimum TCP connection rate for the one or more applications.

Claim 44 (original): The system according to claim 38, further comprising a manager means for communicating with an external means to receive revisions to one or more of the service level agreements, and to send collected statistics data to the external means.

Claim 45 (original): The system according to claim 38, wherein the gatekeeper operates with a real-time admittance/rejection algorithm wherein the flow of the TCP connection request packets is regulated to the server farm on a per-packet basis.

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Claim 46 (original): The system according to claim 38, wherein the gatekeeper operates with a target-rate-based admittance/rejection algorithm wherein the flow of the TCP connection request packets is regulated to the server farm on a per-unit-time basis.